FINANCIAL OPTIONS FOR THE HIGHWAY TRUST FUND

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PREFACE

During the current session, the Congress is considering legislation that could change the scope and financing of the federal highway program. The nation's highways are in disrepair and the existing federal highway taxes are not sufficient to finance their restoration in addition to the current federal construction program. The Congress is faced with major strategic choices about how best to deal with these problems. The purpose of this paper is to review these choices and analyze their consequences.

The paper examines three options: (1) a continuation of the current pattern of spending and financing; (2) an increased highway program financed by the equivalent of an additional four-cents-per-gallon tax on motor fuel; and (3) a redefined federal role that would concentrate federal resources on roads of greatest national importance. The increased program option is very similar to that proposed by the Administration on November 30, 1982.

The Congressional Budget Office (CBO) prepared this report at the request of the House Committee on Public Works and Transportation and the House Committee on Ways and Means. In keeping with CBO's mandate to provide objective and impartial analysis, the study offers no recommendations.

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SUMMARY

Federal financing of highways has not kept pace with highway problems. Revenues from the motor fuels tax--the key source of highway funds--have stopped growing in recent years because a slowing of the increase in automobile travel and improved fuel economy have halted the historical upward trend in gasoline consumption. Compounding this, inflation has eroded the purchasing power of the revenue that is available. This decline in spending power has made it more difficult to deal with the condition of the nation's highways.

In recent years, the principal need of the highway system has shifted from new construction to repair. Many parts of the Interstate highway system are nearing the end of their designed lives and thus require greater maintenance than before; other Federal-Aid highways and bridges have also deteriorated in serviceability. But these repair needs also compete for resources with completion of the Interstate system, which, as now defined, would require more funds than are currently authorized for that purpose. Solving these problems will require increases in federal highway user taxes, increases in state responsibilities together with state user fees, or both.

Sooner or later, the central problem--the deterioration of the nation's major roads--will be taken care of: the economic costs of doing otherwise are simply too high to permit deterioration to continue unabated. The gain in economic efficiency from facing this problem sooner, rather than later, appears clear.

THE PROBLEM

The highway financing problem has two components: rapid growth in the expenditures that appear to be required, and much slower growth in the revenues obtainable under current law.

Need for Increased Spending

There can be no single definition of "need" for infrastructure components such as highways. Rather, needs are conditional on the desired quality and extent of the national highway system. Recognizing this difficulty, highway needs as now understood can be grouped into two principal components: repair, and completion of the Interstate system.

Growing Repair Costs. The physical condition of the nation's highway system has deteriorated in recent years both because spending has not kept

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pace with highway use and because the highway system has aged. For example, nearly half the mileage of the Interstate system has exceeded its estimated design life of 20 years. As a result, over 7 percent of the Interstate system is classed in poor condition today, while virtually none of it was in poor condition ten years ago. The Interstate is particularly important since it carries 19 percent of total traffic even though it represents only 1 percent of total mileage. But other parts of the road system are also in disrepair. Over 20 percent of the bridges have significant structural problems, and about two-thirds of the non-Interstate roads are in poor or fair condition.

Estimates of the extent of these problems, as well as estimates of the costs of correcting them, are necessarily imprecise. Recognizing this imprecision, it nevertheless appears that federal expenditures averaging about $8.8 billion per year for the next four years would be necessary to repair poor roads on the Interstate system and to prevent further deterioration of other parts of the Federal-Aid system. These repair costs include:

- Around $2.9 billion per year for Interstate routes;
- Perhaps $2.9 billion annually for Primary routes;
- Roughly $1.0 billion and $0.7 billion for Secondary and Urban roads, respectively; and
- About $1.3 billion a year for structurally deficient bridges on the entire Federal-Aid system.

Cost of Interstate Completion. About $6.2 billion per year will be required between now and 1990 for completion of the Interstate Highway System ($5.1 billion) and to help the states with upgrading work on parts of the system that are of predominantly local interest ($1.1 billion). As currently planned, completion of unbuilt parts of this system would cost a total of $32.6 billion (in 1982 dollars) by 1990, the scheduled completion date. This sum could be reduced to $13.3 billion (in 1982 dollars) if federal funds were concentrated on only the essential gaps in the system.

Current authorizations for Interstate completion come to $3.2 billion per year. This is far short of the annual expenditures needed to execute current plans, but would be adequate if federal resources were targeted only on construction of essential gaps.

Summary of Needs. Under current practices, the federal share of the costs just outlined for the Interstate and other systems would total $15.0 billion a year, about two-thirds more than the $9 billion authorized for 1982. Of this sum, the needs with the highest federal priorities appear to cost about $9.3 billion: $2.9 billion for repair of the Interstate, $2.2 billion for completion of the most important gaps in the Interstate, $2.9 billion for Primary route repairs, and $1.3 billion for bridge repairs. This implies that

if the federal role was redirected in a way that funded only the highest federal priorities, funding levels close to those now authorized would suffice. But to the extent that the balance of the nation's highway needs are to be met with federal funds, sizable increases in federal resources appear to be required.

Slow Growth in Highway Revenues

The chief highway user fee, a four-cent-per-gallon tax on motor fuels, will generate about $4.4 billion each year during the next five years, even though increases in future construction costs will substantially diminish the purchasing power of these revenues. Over the next four years, total revenues entering the Highway Trust Fund from all sources, including interest, will grow by less than 2 percent per year, while inflation in highway costs is likely to be far greater. As a result, existing highway user taxes will not keep up with inflation, much less begin to address the problems of deferred maintenance and Interstate completion.

PROGRAM AND FINANCIAL OPTIONS

To address these financial pressures, this paper examines three strategic choices in highway policy. The first strategy is a continuation of current spending patterns similar to that proposed by the Senate Committee on Environment and Public Works earlier this year (S. 2574). A second strategy would increase highway-user taxes and program levels so that they more closely matched the apparent needs of all federally aided routes. This approach, called the "increased program levels" option, is modeled on the bill introduced by the House Committee on Public Works and Transportation during the last session (H. R. 6211). This is very similar to the highway bill proposed by the Administration during the final session of the Ninety-seventh Congress. The third strategy, called a "redirected federal role," would concentrate federal resources exclusively on routes of national importance, and return to the states full responsibility for all other roads. (See Summary Table 1.)

Current Spending Patterns

By continuing the current spending patterns, the Congress could defer an increase in highway user fees. As a result, the major federally aided road systems would continue to deteriorate, and not all gaps in the Interstate Highway System would be completed by 1990. The cash balance in the Highway Trust Fund would drop from its current level of about $9.0 billion to around $4.6 billion in 1987. In the long run, however, even this program level could not be sustained without drawing the cash balance down so low that increased taxes would be required.

SUMMARY TABLE 1. COMPARISON OF THREE ALTERNATIVE HIGHWAY PROGRAMS WITH CURRENT HIGHWAY AUTHORIZATIONS AND ESTIMATED HIGHWAY NEEDS (In billions of dollars)

Program Area	1982 Authorizations	Estimated Needs 1983-1986	Average Annual Authorizations 1983-1986		
			Current Spending Pattern a/	Increased Program Levels b/	Redirected Federal Role c/
Interstate Construction	3.2	5.1	3.4	4.0	2.2
Interstate Repair	0.8	2.9	1.6	2.6	2.9
Interstate Upgrading		1.1			1.9
Primary System	1.5	2.9	1.6	2.2	2.9
Bridge Repair	0.9	1.3	1.2	1.7	0.6
Secondary System	0.4	1.0	0.5	0.6	0.0
Urban System	0.8	0.7	0.7	0.8	0.0
Other d/	1.4	e/	0.7	1.5	0.0
Total	9.0	15.0	9.6	13.5	10.5

NOTE: Totals may not add due to rounding.

a. Based on S. 2574 proposed by Senate Committee on Environment and Public Works.

b. Based on H. R. 6211 proposed by House Committee on Public Works and Transportation.

c. Assumes turnback to states of all non-Interstate and non-Primary roads and non-Primary bridges.

d. Interstate transfer grants, safety programs, development highways, etc.

e. Not estimated.

Increased Program Levels

The four-year program approved in 1982 by the House Committee on Public Works and Transportation (H. R. 6211) would increase highway authorizations by about 50 percent over the 1982 level to an average of $13.5 billion per year, an amount close to the current definition of federal highway needs. The largest increases are for areas with the largest highway problems--Interstate repair, bridges, and the Primary system. While Interstate construction would be increased to $4 billion a year, this is still about $1 billion a year short of what is needed to complete the system by 1990. A program of this magnitude would require a tax increase equivalent to an increase in the motor fuels tax from the current four cents per gallon to eight cents per gallon. This would generate $4.4 billion in additional revenues for highways. Rather than raising the motor fuels tax alone, however, a carefully balanced set of increases in all road user taxes would be preferable if each type of vehicle is to pay its fair share of program costs. To aid in setting these taxes, the Department of Transportation recently completed a study of highway cost allocation, estimating the cost responsibility of each group of highway users. 1/ This study concluded that, in general, automobile users paid their share of federal highway costs, while light trucks overpaid and heavy trucks did not pay enough in user taxes.

Redirected Federal Role

As an alternative to increased federal highway taxes, available funds could be targeted exclusively on roads in which there is a predominant federal interest. Under this option, federal funding would average $10.5 billion a year and be concentrated on the Interstate and Primary routes--roads that carry almost half of all vehicle miles but account for only 8 percent of the route miles. Responsibility for the remaining highways would be retained by or returned to state and local governments. This transfer would place a significant burden on the states, since they would need to offset almost $2.6 billion a year in federal funds either by way of tax increases or by reduced spending on these roads. To aid the states in assuming this burden, some federal user tax receipts could be turned back to them during a transition period that would permit states eventually to expand their own user taxes to match their increased responsibilities. Such a turnback in federal receipts would require a temporary increase in federal user fees because adequate financing of the federal-interest parts of the program would itself exhaust the revenues available under the current user tax rates, leaving no surplus for turning back.

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1. U. S. Department of Transportation, Final Report on the Federal Highway Cost Allocation Study (May 1982).

EVALUATION OF OPTIONS

The Congress appears to face two strategic alternatives to the current highway policy: increasing spending to keep pace with needed repairs; or reducing the federal highway role by turning back to states the responsibility for all roads and programs that do not serve predominantly federal interests. Summary Table 2 captures the salient characteristics of these options.

If current policies were continued, the federal expenditure on roads could be held down, but needed repairs would continue to be deferred because of inadequate funding. While this approach could avoid an increase in highway taxes for at least several years, it would also intensify the financial pressures on state governments.

The increased spending option would be more expensive for the federal government, at least in the short run. However, it could hold down the long-run costs of keeping the nation's essential routes in safe and economic operating condition. This could, in turn, provide important gains in long-run economic efficiency. The greater expenditures would require an increase in federal user fees equivalent to a fuel tax of four cents per gallon. On the other hand, this would provide some short-term help in reducing the federal deficit, because highway tax receipts would increase more rapidly than highway spending.

The redirected federal role would ensure adequate funding for the routes that carry nearly half of intercity highway traffic. The central advantage of this option is that it would better align the highway responsibilities of each level of government. This program could be financed without a tax increase, although it would add to the federal deficit in the near term and might suddenly increase state financial responsibilities. In order to ease the transition for state governments, the federal government could temporarily provide financial backing to the states that would more than cover their new program responsibilities. A temporary federal tax increase of 2.4 cents per gallon would generate $2.6 billion that could be phased out once the states had time to get their own programs and financing established.

SUMMARY TABLE 2. SUMMARY OF MAJOR HIGHWAY OPTIONS

Criteria	Current Spending Pattern	Increased Program Levels	Redirected Federal Role
Average Annual Authorization, 1983-1986 (In billions of dollars)	9.6	13.5	10.5
Adequacy to Meet Highway Needs	Not adequate	Generally adequate; more funds would be required for Interstate repair	Adequate for Interstate and Primary; all other systems would rely exclusively on states
Timing of Tax Increase	Could wait until 1987	Necessary now	Could wait until 1986
Burden on States	Current financial pressures on states would continue to mount as federal aid remained inadequate	No burden. The increase in federal programs would help alleviate financial pressure on states	Major increases in state activity would be required, often forcing states to increase state user fees
Effect on Long-Run Costs of Maintaining Essential Roads in Repair	Costs would probably be driven up by inefficient deferral of repairs	Costs would be reduced if increased funding was targeted on needed repairs to essential routes	Costs for Interstate and Primary would be reduced
Effect on Deficit	Deficit would increase by $4.4 billion over four years	Deficit would decrease by $5.4 billion over four years a/	Deficit would increase by $5.5 billion over four years

a. Does not include any reduction in receipts from income taxes.

CHAPTER I. INTRODUCTION

The federal government faces a major long-run policy decision about its role in financing the nation's highways: either it must greatly increase its effort or it must redefine more narrowly its role in building and repairing roads. Currently, federal spending is not keeping up with needs, and the condition of federally aided roads has deteriorated as a result. If policies are not changed, the condition of the system will continue to worsen. Such an outcome would be economically unsound since about one-quarter of U. S. industrial output moves over federally aided roads, as does 85 percent of all intercity passenger travel. Even a modest deterioration of this infrastructure could mean substantial losses to industrial and personal users of the system. While some parts of the federal highway program may be challenged as inessential, the question for the vast bulk of highway spending is not so much whether the funds should be spent, but rather who--the federal government or the states--should spend them.

Sooner or later, the key problem--the deterioration of the nation's major roads--will be addressed. The costs of permitting it to continue are simply too high. The gain in economic efficiency from facing this problem sooner, rather than later, appears clear.

While the dollar dimensions are arguable, more funding is crucially needed for two activities:

- o Repair of existing roads and bridges; and
- o Completion of the Interstate Highway System.

This paper compares current federal highway policies to two alternative approaches: increased spending more closely matched to needs but requiring higher taxes on highway users; and a program based on a restricted federal role that could be financed in large part from current highway user receipts.

The options differ in terms of how soon they face up to the highway problem and how they distribute the financial responsibility between state and federal governments. They also differ in the tax increases they would require, the funds they would make available, the burden they would place on state and local governments, and their impact on the federal deficit.

Chapter II summarizes the current federal highway highway program and its problems. Chapter III describes the Highway Trust Fund used to finance the program, and the resources currently available. Chapter IV presents the three highway options that are likely to be before the Congress in the near future. Chapter V assesses the three options in terms of

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economic efficiency, their effects on highway user taxes, their adequacy in meeting the highway problem, their compatibility with state programs, and their effect on the overall budget deficit.

CHAPTER II. THE FEDERAL-AID HIGHWAY SYSTEM

Almost all of the approximately $9 billion that the federal government annually spends on roads is devoted to a selected set of roads called the Federal-Aid system. In addition to 260,000 bridges, the system comprises: over 40,000 miles of expressways in the Interstate network; 260,000 miles of major arterials in the Primary system; and 520,000 miles of collector routes in rural areas (called the Secondary system) and in urban areas (called the Urban system). The Interstate system is very heavily travelled, carrying about 19 percent of all the nation's highway traffic on only 1 percent of the mileage. Combined, all five parts of the Federal-Aid system carry 80 percent of the nation's traffic on only about 20 percent of the highways (see Table 1). Truck traffic is particularly concentrated on major Federal-Aid routes: in 1977, the Interstate system carried 19 percent of passenger vehicle traffic but 45 percent of all travel by combination trucks.

The 1982 federal highway authorization contained more than 30 separate programs, over 90 percent of which are financed by the Highway Trust Fund (see Table 2). 1/ For 1982, about $9.0 billion was available for federal highway spending, of which 80 percent was accounted for by the six largest programs:

- o $3.1 billion for completion of unbuilt Interstate routes;
- o $1.5 billion for the Primary system;
- o $900 million for bridge repairs, including some bridges on state-financed or county-financed routes;
- o $800 million for the Urban system;
- o $800 million for repair and reconstruction of Interstate highways (also known as the 4R program for "resurfacing, restoration, rehabilitation, and reconstruction"); and
- o $400 million for the Secondary system.

The rest of the federal highway program includes a miscellany of programs serving a wide variety of purposes. These include economic

1. Recent House and Senate highway bills, as well as earlier proposals by the Administration, would shift most highway programs now paid for by the general taxpayer into the trust fund.

TABLE 1. MAJOR PARTS OF THE NATION'S HIGHWAY SYSTEM

	Route Miles	Percent of Total Vehicle-Miles	Percent of Capital Spending Provided by Federal Government a/	Percent in Poor Condition	Percent in Fair Condition
Federal-Aid Highway System					
Interstate	41,216	19.0	91 b/	7.0	29.0
Primary c/	259,240	29.5	70	6.0	52.0
Secondary	398,108	8.7	25	9.0	66.0
Urban	124,115	21.9	20	8.0	59.0
Bridges	259,950 d/	N/A	70	10.5	15.5 e/
Total Federal-Aid Highways f/	822,679	79.1 f/	50	7.9 f/	58.7 f/
Non-Federal-Aid System					
Roads	3,034,179	20.9	N/A	N/A	N/A
Bridges	313,700 d/	N/A	N/A	33.4	27.4
Total Roads and Highways f/	3,856,858	100.0	N/A	N/A	N/A

SOURCE: Federal Highway Administration Highway Statistics for 1980; and The Status of the Nation's Highways: Conditions and Performance (January 1981).

a. U. S. Department of Transportation, Final Report on the Federal Highway Cost Allocation Study (May 1982), pp. iv-14. These estimates exclude maintenance.

b. Federal aid also accounts for about 90 percent of 3R (resurfacing, restoration, and rehabilitation) work on the Interstate, up from 50 percent in earlier years when federal aid for 3R was much less. In states with large areas of federally-owned land, the percentage is higher than 90.

c. Excludes Interstate mileage.

d. Number of bridges.

e. These bridges do not have adequate capacity for existing traffic or do not meet current design standards although their structural condition is adequate.

f. Excludes bridges.

development work, specifically identified projects (the Great River Road and most of the demonstration projects), and safety-related grants. In recent years, the total funding for these miscellaneous programs has declined--funds have not always been appropriated, and some authorizations have been phased out. Major programs currently financed outside the trust fund include the Appalachian Regional Commission and Interstate transfer grants used for highway projects.

Federal funds accounted for about half of the spending for construction and major repair of the Federal-Aid highway system, and for less than 30 percent of the total spent by all levels of government on roads and bridges (around $37 billion in 1982). State governments supplied about half the total spending; cities, counties, and other local governments provided the balance. Most state and local spending goes for roads that are not included in any of the federal systems sketched above, and for the more locally oriented federal systems (primarily the Secondary and Urban systems), as well as for routine maintenance on all road systems.

HISTORICAL OVERVIEW

Federal highway spending has passed through several cycles since the modern highway program began in 1916. In its early years, highway spending was dominated by local governments while the federal program concentrated on roads needed for interstate commerce--a system that eventually became known as the Primary system. 2/ Since the beginning, state governments have assumed all day-to-day control over the highway system; the federal government has functioned as a financier, providing funds to the state highway departments that planned, constructed, and maintained the roads. Over time, the federal program expanded by adding new programs of aid for rural and urban roads that served as collectors for the primary roads. The rural collectors became the Secondary system in 1946, and the urban collectors became the Urban system in 1974. In the process, the mileage included in the Federal-Aid system grew from 169,000 in 1923 to 820,000 at present--or from 5 percent of the nation's roads in 1923 to over 20 percent.

As high-speed highway travel became technologically possible, the federal government updated its core program for major intercity arterials--the Primary system--by beginning an entirely new, advanced system of intercity highways known as the Interstate system. Earlier federal aid had essentially financed state-initiated projects as long as they fitted into certain program ground rules. For example, the program for the Primary system had permitted states to designate (subject to federal approval) the routes that were to be parts of the system. Limits were placed on how large a portion of a state's highway system could be classified as primary routes

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2. For more details, see Congressional Budget Office, Highway Assistance Programs: A Historical Perspective (February 1978).

TABLE 2. HIGHWAY PROGRAM AUTHORIZATIONS IN FISCAL YEAR 1982, BY SOURCE OF FUNDS AND PROGRAM (In millions of dollars)

Source of Funds and Program	Authorization	Amount Available for Spending in 1982
Programs Financed by the Highway Trust Fund		
Interstate system	3,100.0	3,100.0
Interstate apportionment	125.0	125.0
Interstate 4R a/	800.0	800.0
Federal-Aid Primary	1,500.0	1,500.0
Federal-Aid Secondary	400.0	400.0
Federal-Aid Urban	800.0	800.0
Forest highways	33.0	33.0
Public lands highways	16.0	16.0
Economic growth center development highways	50.0	50.0
Emergency relief	100.0	100.0
National Highway Traffic and Safety Administration	100.0 b/	92.5
Highway safety R&D (NHTSA)	31.0	23.8
Federal Highway Administration (FHWA) safety grants	10.0	10.0
Highway safety R&D (FHWA)	13.0	4.9
Bridge reconstruction	900.0	900.0
Elimination of hazards	200.0	200.0
Pavement marking	65.0	65.0
Rail-highway crossings	190.0	190.0
Accident data collection	5.0	1.0
Programs Financed Jointly by the Highway Trust Fund and General Revenues		
Bicycle program	20.0 c/	0.0
Great River Road	35.0 d/	25.0
Demonstration projects for railroad/highway crossings	100.0 e/	0.0

(Continued)

TABLE 2. (Continued)

Source of Funds and Program	Authorization	Amount Available for Spending in 1982
Programs Financed by General Revenues		
Forest development roads and trails	140.0	313.7 f/
Public lands development roads and trails	10.0	18.0 g/
Public roads and trails	30.0	0.0
Parkways	45.0	3.5
Indian reservation roads and bridges	83.0	47.2
Appalachian development highways	140.0	140.0
Administration expenses for highway beautification	1.5	0.5
Territorial highways	12.0	3.0
Control of outdoor advertising	30.0	0.0
Safer-Off system roads	200.0	0.0
Access highways to lakes	15.0	0.0
Total	9,299.5	8,962.1

a. 4R = resurfacing, restoration, rehabilitation, and reconstruction.

b. Grants made by the NHTSA. Also includes $20 million for enforcement of maximum speed limit.

c. 50 percent trust fund, 50 percent general fund.

d. $25 million in direct spending from the trust fund and $10 million for appropriation from the general revenues.

e. 67 percent trust fund, 33 percent general fund.

f. Part derived from timber sales.

g. Part derived from grazing fees.

eligible for federal aid, but broad latitude was given to the states in selecting which routes to include. In contrast, the federal government more actively plans and controls the Interstate program, which it designed as a planned system of national routes. It provided the funds to build those routes on unusually attractive terms. Unlike the other federal-aid systems, which had received 50 percent federal support, the Interstate routes were eligible for 90 percent federal financing. The strong, centralized federal control of the Interstate system and the exceptionally strong federal financial support for it reflected the national interest in this road system, which today provides the principal intercity highway linkage between the nation's major cities, industrial areas, ports, defense installations, and recreational areas.

But as the federal government tightly focused its interest in intercity highways through the Interstate program, its role in other highway activities became more dispersed and varied. Since the late 1960s, the scope of these other highway programs has continually expanded, chiefly through the addition of safety and other relatively specialized programs. The number of separate authorizations increased dramatically from 8 in 1956 to 38 by 1974. 3/

In addition, the federal government has assumed more of the cost of the projects in which it is involved, even though the federal share of overall highway spending has remained roughly constant during the last two decades. The federal matching ratio for non-Interstate projects was increased from the 50 percent that had prevailed since 1916 to 70 percent in 1974 and to 75 percent for most programs in 1978. These increases in the share of project financing borne by the federal government actually represent a decline in the leverage of the federal government in all highway programs, because the federal share of total spending has not increased correspondingly.

Typically, states arrange their construction schedules by setting out their planned projects; match these with available federal funds to ensure that all such financing is used; and then go on to build the remaining projects themselves, budgets permitting. The result is that, for all of the major Federal-Aid systems except the Interstate system, federal funds have increasingly become akin to revenue sharing: federally collected revenues are transferred to states with relatively little federal influence on project selection.

In brief, the federal highway program has shown two general trends during recent years. First, many small, specialized categorical programs have been added to address specific Congressional concerns. Second, the major non-Interstate highway programs--involving the Primary, Secondary,

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3. Ibid. For 1974 there were also 17 separate authorizations from the general fund.

and Urban systems--are financed by a kind of revenue sharing, in which state financial conditions and program priorities dominate investment decisions.

CURRENT HIGHWAY PROBLEMS

As the federal highway program has changed over the years in response to state needs and Congressional concerns, spending levels have not been maintained at levels adequate to prevent deterioration of the road systems. This problem will become even more severe in the years ahead unless spending--either state or federal--is increased.

While there is significant physical deterioration on almost every part of the highway network, the Interstate system provides a new and particularly troublesome concern. Many Interstate roads are reaching the end of their planned life cycle for the first time, so that greatly increased repair funds will be needed to maintain them. A similar life cycle crisis for bridges in the Federal-Aid system is expected during the 1980s and 1990s. It has already arrived for many bridges in state and local systems, over 30 percent of which are classed as structurally deficient.

These repair needs arise at a time when substantial funds are required to complete the remaining unbuilt portions of the Interstate system. As originally conceived, the system would have been completed well before the first cycle of major repairs was due. Construction was delayed by general cost increases and changes in the scope of the system, so that new construction has increasingly come to compete with repairs for the available funding. Although only part of the remaining 1,500 miles of unbuilt routes are vital to an interconnected national network, the system as currently defined will require larger authorizations if it is to be completed by 1990.

The financial pinch has been considerably worsened by inflation and rising energy prices. On one hand, highway construction costs have risen even faster than the cost of living in recent years. On the other, rising fuel prices have slowed the growth in vehicle travel while stimulating improvements in vehicular fuel efficiency. As a result, revenues from motor fuels taxes have leveled off at a time when the costs of highway construction and repair required rapidly increasing funds. 4/ These financial pressures have forced not only the federal government but many states to defer highway repairs. Even though almost half the states have raised their taxes on motor fuel in the past two years, this has not been enough to make up for

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4. The trend of the 1970s represents a change from the 1960s when receipts grew at an annual rate of about 8 percent, exceeding highway cost inflation. It should be noted that in the past two years highway construction costs have declined, in large part because of excess capacity in the construction industry.

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purchasing power lost to inflation in earlier years. (Appendix C shows current state motor fuel taxes.)

The need for three main categories of repairs--Interstate repairs, non-Interstate road repairs, and bridge replacement--is summarized in the following three sections, followed by a discussion of the financing required to complete the Interstate Highway System. The chapter concludes with a summary of the cost estimates.

Any discussion of needs must be approached with caution since estimates of needs often reflect the expectations of particular groups or agencies. The following sections, however, attempt to use well-defined concepts of needs in making these estimates.

Interstate Repairs

The typical Interstate highway is designed to last for 20 years before requiring major rehabilitation work. Since construction on the Interstate system began in 1956, over 41 percent of the system has already reached this milestone, 5/ and 75 percent of the system should reach it by 1990. The Federal Highway Administration reports that 6 to 7 percent of Interstate mileage was in poor condition in 1978, up from 4 percent in 1975. 6/ This represents a significant change from earlier years when most parts of the Interstate were so new that virtually none of it was in poor shape. Funds for Interstate repair must now be added to construction needs.

Keeping roads in good repair is crucial because the overall cost of using the roads increases substantially as road conditions become worse. Vehicle maintenance costs increase as roads become rougher, travel times lengthen at lower speeds, and travel distances grow as drivers try to avoid particularly bad stretches of road. Accidents, too, may increase. One study found that operating costs on a road in poor condition may be 20 to 36 percent higher than on a road in good condition (see Table 3). In addition, the condition of a road deteriorates at an increasing rate if needed repairs are not made. As a result, the long-run cost to the government could

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5. Congressional Budget Office, The Interstate Highway System: Issues and Options (June 1982), p. 6.

6. Federal Highway Administration, The Status of the Nation's Highways: Conditions and Performance (January 1981). The bad roads are concentrated in a few states; only five (Arizona, Minnesota, North Carolina, Ohio, and Oregon) were reported to have more than 10 percent of their Interstate in poor condition and about half the states were reported to have less than 2 percent. Informal comments from FHWA indicate that measurement problems may have overstated the fraction of poor miles reported in 1978.